



## TTC 2030 Family

### Powerful Safety Electronic Control Units



#### Key benefits

- ✔ Future-proof high-performance 2nd generation Infineon AURIX™ TriCore™ with 2 cores (lockstep cores) running at 300 MHz and hardware security module
- ✔ C-programming API with multicore real-time operating system
- ✔ 2 x CAN FD interfaces, one with ISOBUS capability
- ✔ 4 x SENT interfaces with SPC support
- ✔ 30 x highly configurable I/Os
- ✔ Safety certified

The TTC 2030 is a family of compact control units specially developed for use in cost-sensitive applications or smaller machines. The controllers are designed for use in demanding safety-relevant applications. The product variant TTC 2038 fulfills safety requirements up to SIL 2 (IEC 61508), PL d (EN ISO 13849), AgPL d (ISO 25119), ASIL C (ISO 26262) and MPL d (ISO 19014) and is TÜV safety certified.

#### Integrated PXROS real-time operating system with multicore support

The TTC 2030 products ship with a real-time operating system providing a high level of application robustness and responsiveness to safety events and can be programmed in either C or in CODESYS®\* Safety SIL 2.

Mixed-criticality support allows safety-related and non-safety-related code to run on the same CPU, without reducing the overall safety level. This ensures low development costs for mobile machine electronics and fast time-to-market.

#### Rich and flexible I/O set

Up to 30 highly configurable I/Os are available, which can be initialized at the application level as different types of inputs or outputs. In addition to analog and digital timer inputs, the ECU is also equipped with HS PWM and PVG outputs. This ensures that the various hydraulic valves used

in off-highway machinery can be controlled, making the TTC 2030 the perfect solution for hydraulics control.

Part of the design are multiple current measurement feedback loops and plausibility checks which enable runtime self-diagnosis of the vehicle and various safety architectures. For connection of smart sensors, up to four SENT interfaces (compliant with the SAE J2716 standard) with Short PWM Code (SPC) support are available. They enable cost-efficient transmission of sensor data to the ECU.

#### High-speed connectivity

In addition to two CAN FD interfaces (bit rate of up to 2 Mbit/s), featuring Wake-Up over CAN and ISOBUS compatibility, the TTC 2030 is equipped with a LIN interface.



#### Application fields

- Agricultural machines
- Construction / material handling machines
- Municipal vehicles

### Extended software feature set

A filesystem is provided for efficient memory management, data logging and configuration. The bootloader is compatible with Unified Diagnostic Services (UDS) for standardized vehicle diagnosis and software updates.

In case of an emergency, up to two safety groups of freely assignable output pins can be deactivated via an external switch. This enables easy and cost-efficient implementation of an emergency button\* to the machine.

### Robustness

The devices are protected by a proven, robust and compact housing, specially designed for the off-highway industry, and offers an optimized relation of size to performance and can easily be mounted on the machine using the four screw holes provided.

### Variant overview

	TTC 2038
CPU	Infineon Aurix™ TriCore™ TC367 300 MHz, 3 cores (2 lockstep cores)
	576 KB int. SRAM, 4 MB int. Flash
	128 KB int. EEPROM emulation
	Hardware security module
Interfaces	2 x CAN FD up to 2 Mbit/s (1 x CAN ISOBUS compliant; 1 x CAN wake-up capable)
	4 x SENT with SPC support
	1 x LIN serial interface
Number I/Os	16 inputs / 16 outputs
Sensor supply	1 x sensor supply 5 V / max. 150mA
Internal	Internal monitoring of board temperature, sensor supply and supply voltage Power-On via Terminal 15, Wake-up pin
Software	Programming Environment featuring RTOS support
	CODESYS® V3 including support for CANopen® Master*
	CODESYS® Safety SIL 2 including support for CANopen® Safety Master*
Functional safety	IEC 61508 SIL2 / EN ISO 13849 PL d / ISO 25119 AgPL d SRL2 / ISO 26262 ASIL C / ISO 19014 MPL d

\*upcoming feature



TTControl Italy, Brixen  
Phone: +39 0472 26 80-11

TTControl Austria, Vienna  
Phone: +43 1 585 34 34-0